Japanese post-doctoral fellowship at the Institut Pasteur: first call (2019)

Research project 3

Host laboratory	Mouse Genetics Laboratory
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Title	Identification of predictors of protection against influenza after vaccination in mice
Abstract	Influenza virus (IV) infection represents a major public health issue affecting 1-20% of the population during annual seasonal epidemics. Vaccines against influenza are the best current preventative measure but only confer protective immunity to half of the vaccinated persons. This variability between individuals depends on a range of viral and host factors. We are addressing this question in mice using the Collaborative Cross, a panel of inbred strains that has similar genetic diversity as observed across the human population. Our preliminary data show that CC strains display highly variable antibody titers after IV vaccination. In this project, we will (1) identify genes and pathways controlling these variations by genotype-phenotype association, (2) identify biomarkers of high vaccine response from immunological parameters and gene expression variations, and (3) assess the protection conferred by vaccination against an infectious challenge with IV in a subset of CC strains. Our results will inform human studies.